



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Raeder Examiner: Nguyen, D.
Serial No.: 09/383,876 Group Art Unit: 3723
Filed: August 26, 1999 Docket No.: AMDA.316PA
Title: POLISHING UNIFORMITY VIA PAD CONDITIONING

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence and the papers, as described hereinabove, are being deposited in the United States Postal Service in triplicate, as first class mail, in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on October 2, 2002.

By: Erin M. Nichols
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Brief
E. Nichols
10/11/02

APPEAL BRIEF

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Assistant Commissioner for Patents
Washington, D.C. 20231

TECHNOLOGY CENTER R3700

Sir:

This is an Appeal Brief submitted pursuant to 37 CFR section 1.192 for the above-referenced patent application. Please charge Deposit Account 01-0365 (TT2512) in the amount of \$320 for this brief in support of appeal as indicated in 37 C.F.R. §1.17(c).

I. Real Party in Interest

The real party in interest is Advanced Micro Devices, Inc., having a place of business at One AMD Place, P.O. Box 3453, Sunnyvale, California. The above referenced patent application is assigned to Advanced Micro Devices, Inc.

II. Related Appeals and Interferences

There are no related appeals or interferences.

III. Status of Claims

Claims 1-12 and 14-19 are being presented for appeal. Claims 1-4, 6, 8, 10-12 and 17-19 stand rejected under 35 U.S.C. §102(b) in view of *Renteln* (U.S. Patent No. 5,664,987); claims 5, 7 and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the '987 reference in view of *Yang* (U.S. Patent No. 6,113,462); and claims 14-16 stand

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rejected under 35 U.S.C. §103(a) as being unpatentable over the '987 reference in view of *Hu et al.* (U.S. Patent No. 6,227,947). The pending claims presented for appeal, as presently amended, may be found in the attached Appendix of Appealed Claims.

IV. Status of Amendments

The application was initially filed on August 26, 1999, including claims 1-16. In response to the first Office Action mailed June 14, 2000, including a Restriction Requirement, an Office Action Response was filed on July 14, 2000, *inter alia*, adding new claim 17. A second Office Action removing the Restriction Requirement was mailed October 19, 2000, and an Office Action Response was filed on January 19, 2001, *inter alia*, canceling claim 13 and adding new claims 18-19. On March 19, 2001 a Final Office Action was mailed, and in response a Final Office Action Response was filed on April 23, 2001. A non-Final Office Action was mailed on May 9, 2001, and an Office Action Response was filed on June 26, 2001. In response to an Office Action mailed on August 31, 2001, an Office Action Response was filed on November 30, 2001. On March 18, 2002 a Final Office Action was mailed, and in response a Final Office Action Response was filed on May 20, 2002 by facsimile. Another Final Office Action was mailed on June 4, 2002 and a Final Office Action Response was filed on August 5, 2002 by facsimile in response. An Advisory Action was mailed on August 14, 2002 maintaining the final rejections, and a Notice of Appeal was filed on September 4, 2002.

V. Summary of Invention

Appellant's invention is directed to a method for chemical-mechanical polishing (CMP) a wafer using a CMP apparatus having a polishing table (210) that includes a polishing pad (140) and a wafer carrier (130) adapted to carry a wafer (135) relative to the center of the polishing table (210). The wafer (135) is polished, using the polishing pad (140), at a position relative to the center. Upon determining that the wafer (135) is being polished in a center-offset manner; and as a function of the wafer (135) being polished in the center-offset manner, the pad (140) is conditioned and the wafer carrier (130) is positioned misaligned with respect to the pad (140).

VI. Issues for Review

ISSUE 1: Is the § 102(b) rejection of claim groups 1-3 proper when the asserted *Renteln* '987 reference fails to identically teach every element of the claimed invention?

ISSUE 2: Is the § 103(a) rejection of claim group 4 proper when the asserted combination of references (*Renteln* '987 in view of *Yang* '462) fails to teach or suggest every element of the claimed invention?

ISSUE 3: Is the § 103(a) rejection of claim group 4 over the asserted combination of references (*Renteln* '987 in view of *Yang* '462) proper when the Examiner failed to cite any evidence of motivation in the prior art to modify the '987 reference?

ISSUE 4: Is the § 103(a) rejection of claim groups 5-6 proper when the asserted combination of references (*Renteln* '987 in view of *Hu* '947) fails to teach or suggest every element of the claimed invention?

ISSUE 5: Is the § 103(a) rejection of claim groups 5-6 over the asserted combination of references (*Renteln* '987 in view of *Hu* '947) proper when the Examiner failed to cite any evidence of motivation in the prior art to modify the '987 reference?

VII. Grouping of Claims

For purposes of this appeal, claims 1, 3, 6, 8, 10-12 and 17-19 are in group 1, claim 2 is in group 2, claim 4 is in group 3, claims 5, 7 and 9 are in group 4, and claim 14 is in group 5, and claims 15-16 are in group 6. The claims as now presented do not stand or fall together.

VIII. Argument

The claims in group 1 are separately patentable over the prior art because they are directed to subject matter that includes determining that a wafer is being polished in a center-offset manner and as a function of the wafer being polished in the center-offset manner, conditioning a pad and positioning a wafer carrier misaligned with respect to the pad, which is not taught by the prior art. Claim 2 in group 2 is separately patentable over the prior art and the other claim groups because it is directed to subject matter that includes the center-offset manner including at least one of: a center-fast or center-slow manner, and further including inspecting a wafer during the polishing process, which is not necessarily

present in the other claim groups. Claim 4 in group 3 is separately patentable over the prior art and the other claim groups because it is directed to subject matter that includes arranging a conditioning wheel over the pad and relative to the center of the polishing table when the wafer is being polished in a center-fast manner, which is not necessarily present in the other claim groups. The claims in group 4 are separately patentable over the prior art and the other claim groups because they are directed to subject matter that includes arranging the conditioning wheel as comprising thinning a portion of the pad, which is not necessarily present in the other claim groups. Claim 14 in group 5 is separately patentable over the prior art and the other claim groups because it is directed to subject matter that includes a supply arranged to supply conditioning material to the polishing pad, which is not necessarily present in the other claim groups. The claims in group 5 are separately patentable over the prior art and the other claim groups because they are directed to subject matter that includes conditioning material being supplied responsive to a detection arrangement, which is not necessarily present in the other claim groups.

ISSUE 1: Is the § 102(b) rejection of claim groups 1-3 proper when the asserted *Renteln* '987 reference fails to identically teach every element of the claimed invention?

The § 102(b) rejection of the claims of groups 1-3 is improper because the cited reference fails to establish a *prima facie* case of anticipation. A *prima facie* case of anticipation requires a complete correspondence between the asserted prior art and the claimed invention. The cited '987 reference does not provide correspondence to every element of the claimed invention; therefore, the '987 reference cannot be used to maintain the rejection under § 102(b). The Final Office Action fails to explain how all limitations of the claimed invention are taught by the asserted reference. More specifically, Appellant fails to see among the cited portions of the reference, *inter alia*, features completely corresponding to the limitations of determining that the wafer is being polished in the center-offset manner and as a function of the wafer being polished in the center-offset manner, conditioning the pad and positioning the wafer carrier misaligned with respect to the pad. Since each and every one of the claimed limitations are not identically taught, the cited reference fails to establish a *prima*

facie case of anticipation, and Appellant requests that the § 102(b) rejection of claim groups 1-3 be removed.

The § 102(b) rejection, set forth in the Office Actions of record, only generally alleges that the '987 reference teaches the claimed invention; however, the § 102(b) rejection does not provide any citations within the '987 reference where the various specific claimed limitations of the present invention are explicitly taught. In an attempt to assert that the '987 reference teaches a center-offset approach of the presently-claimed invention, the Examiner in the Final Office Action, Response to Arguments section, points to col. 3, lines 53-58 of the '987 reference as allegedly teaching the claimed center-offset polishing process. Upon review of the cited portion of the '987 reference, Appellant can find no discussion of a center-offset polishing process taught in the context of the instant invention, and in particular Appellant can find no identical teaching of determining that the wafer is being polished in the center-offset manner, and as a function of the wafer being polished in the center-offset manner, conditioning the pad and positioning the wafer carrier misaligned with respect to the pad. Appellant respectfully submits that the discussion at col. 3, lines 53-58 of the '987 reference concerning a polishing period being dependant upon wafer surface topography, the abrasiveness of slurry, rotational velocity of the polishing pad and level of pressure does not identically teach one having ordinary skill in the art to determine that the wafer is being polished in the center-offset manner, and to condition the pad and position the wafer carrier misaligned with respect to the pad as a function of the wafer being polished in the center-offset manner. Appellant respectfully submits that the '987 reference's teaching of inspecting a wafer after polishing, then conditioning a pad in response to the inspection does not teach conditioning a pad as a function of the wafer being (present sense) polished in the center-offset manner, nor positioning the wafer carrier as a function of the (that) wafer being (present sense) polished in the center-offset manner.

The Examiner further asserts in the Final Office Action, Response to Arguments section, that col. 4, lines 14-19 of the '987 reference allegedly teaches conditioning the pad as a function of a center-offset condition; however, the attempted correlation is misguided since the Examiner's use of "center-offset" seems to incorrectly refer to an offset (of the wafer position) with respect to the center of the pad, rather "center-offset" correctly refers to an offset (in the polishing of the wafer itself) with respect to the center of the wafer, not the

center of the pad (*see e.g.*, specification of the present invention, p. 3, line 7 to p. 4, line 9). The cited portion of the '987 reference provides in relevant part, "Based upon a determination of the rate of oxide removal, a modified recipe 120 is generated for conditioning the polishing pad . . . [t]he modified recipe 120 specifies the period of time of conditioning . . . of the polishing pad as a function of the radius of the pad." Absolutely no mention is made in the cited portion of the '987 reference of positioning the wafer carrier misaligned with respect to the pad as a function of the wafer being polished in the center-offset manner.

Finally, the Examiner asserts in the Final Office Action, Response to Arguments section, that Fig. 3 of the '987 reference allegedly teaches "positioning the wafer misaligned with respect to the pad" (emphasis added). The Examiner further points to col. 4, lines 28-31 of the '987 reference in support of the § 102(b) rejection. Upon review of the '987 reference, it appears that the cited misalignment is related to typical CMP approaches wherein the wafer is not aligned with the axis of rotation of the pad. Such misalignment is not related to a determination of a wafer being polished to a center-offset condition as presently claimed (*e.g.*, the positioning of the wafer in FIG. 3 does not appear to be related to any determination that a wafer has a center-offset condition, nor does the specification of the '987 reference appear to teach such limitations). The cited portions of the '987 reference appear to only refer to a pad's axis of rotation offset, which is common to such CMP applications and which does not teach the wafer carrier positioning being a function of determining the wafer having been polished in a center-offset manner, and uses thereof, such a determination to which the present invention is directed. The '987 reference appears to be limited to CMP pad conditioning as a function of a general "removal rate" determination in order to sufficiently polish a pad (*see, e.g.*, the Abstract). The '987 reference does not appear to disclose positioning the wafer as a function of a center-offset condition (of the wafer itself) and polishing the wafer. Moreover, the polishing referred to at col. 3, lines 53-58 of the '987 reference occurs *prior* to making any measurements relevant to the uniformity of the wafer being polished (*see, e.g.*, column 4, lines 1-8 of the '987 reference). Therefore, since there had been no previous determination of the non-uniformity of the wafer polishing, the polishing referred to on lines 53-58 of column 3 cannot be performed as a function of such a determination as the Examiner asserts. In contrast, the '987 reference appears to be limited

to CMP pad conditioning as a function of a general “removal rate” determination in order to sufficiently polish a pad (*see, e.g.*, the Abstract). The ‘987 reference does not appear to disclose positioning the wafer as a function of a center-offset condition and polishing the wafer.

The Examiner’s assertions are simply misdirected. While Fig. 3 of the ‘987 reference indeed shows the wafer positioned on a pad offset from the pad’s center, merely positioning a wafer on a pad offset (misaligned) from the pad’s center is not a claimed limitation of the independent claims of the present invention. Appellant fails to see how Fig. 3 teaches the claimed features of positioning the wafer carrier misaligned with respect to the pad as a function of a determination that the wafer is being polished in a center-offset manner. Appellant fails to see any teaching in the cited portions of the ‘987 reference, including Fig. 3, that the wafer carrier is positioned upon a pad as a function of a determination that the wafer is being polished in a center-offset manner. The Examiner’s § 102(b) rejection ignores the “as a function” portion of the claim language, since such a limitation requires some link (function) between position of the wafer carrier on the pad and a determination that a wafer is being polished in a center-offset manner. The ‘987 reference does not identically teach wafer carrier positioning being a function of a wafer being polished in a center-offset manner. Therefore, the Examiner has failed to establish a *prima facie* § 102(b) rejection, and Appellant requests that it be removed.

(1A) With further respect to claim group 2, Appellant additionally fails to see among the cited portions of the reference, *inter alia*, features completely corresponding to the claimed limitations of the center-offset manner including at least one of: a center-fast or center-slow manner, and further including inspecting a wafer during the polishing process. First, the Final Office Action only generally alleges the ‘987 reference teaches the center-offset manner including a center-fast or center-slow manner, but does not point to any specific portion of the ‘987 reference that does so. Appellant respectfully submits that although the ‘987 reference discusses determining the “variations in remaining thickness as a function of radius” (col. 4, lines 1-13), the ‘987 reference does not identically teach using said variations for making center-fast or center-slow determinations concerning the wafer. Secondly, again the Final Office Action only generally alleges the ‘987 reference teaches inspecting a wafer during the polishing process, but does not point to any specific portion of

the '987 reference that does so. It appears that the '987 reference merely teaches inspecting a wafer after polishing is complete (col. 3, line 52 – col. 4, line 13, and in particular col. 3, lines 52-58). Therefore, the Examiner has failed to establish a *prima facie* § 102(b) rejection, and Appellant requests that it be removed with respect to claim group 2.

(1B) With respect to claim group 3, Appellant additionally fails to see among the cited portions of the reference, *inter alia*, features completely corresponding to the claimed limitations of arranging a conditioning wheel over the pad and relative to the center of the polishing table when the wafer is (present tense) being polished in a center-fast manner. As discussed in paragraph (1A) above, the '987 reference does not appear to teach inspecting the wafer until after polishing is complete. Further, the '987 reference appears to teach conditioning the pad pursuant to the wafer inspection. Since the '987 reference teaches the wafer inspection after polishing is complete, pad conditioning must also occur after wafer polishing is completed, rather than when the wafer is (present tense) being polished (*i.e.*, during the wafer's polishing period). A teaching of a post-polishing wafer inspection simply cannot determine that a wafer is being polished in a center-fast manner. Therefore, the Examiner has failed to establish a *prima facie* § 102(b) rejection, and Appellant requests that it be removed with respect to claim group 3.

ISSUE 2: Is the § 103(a) rejection of claim group 4 proper when the asserted combination of references (*Renteln* '987 in view of *Yang* '462) fails to teach or suggest every element of the claimed invention?

The § 103(a) rejection of the above-mentioned claim group is improper because the cited references fail to establish a *prima facie* case of obviousness. A *prima facie* case of obviousness requires a complete correspondence between the asserted prior art and the claimed invention. The cited references do not address the same problem as the claimed invention, or show all aspects claimed. In addition, the Final Office Action fails to explain how the invention is taught by the asserted '987 reference in view of the '462 reference.

More specifically and for all the reasons stated above in connection with the § 102(b) rejection, and incorporated herein by reference, Appellant fails to see among the cited reference portions, *inter alia*, a teaching or suggestion of features completely corresponding to the claimed limitations of determining that the wafer is being polished in the center-offset

manner and as a function of the wafer being polished in the center-offset manner, conditioning the pad and positioning the wafer carrier misaligned with respect to the pad. Initially establishing a *prima facie* obviousness rejection under § 103(a) requires that the Office Action provide teaching or suggestion of every element of the claimed invention. In this regard, the § 103(a) rejection fails to cite references that teach or suggest every element of the instant invention since the '987 reference does not identically teach all the claimed limitations found in the independent claim (claim 1) from which the claims of claim group 4 depend. Therefore, the Examiner failed to establish a *prima facie* case of obviousness, and the § 103(a) rejection should be removed.

Appellant further submits that the § 103(a) rejections are improper because the Examiner failed to establish a *prima facie* case of obviousness in regard to the asserted teachings of the '462 reference. As discussed above, a *prima facie* obviousness rejection under § 103(a) requires that the Office Action provide teaching or suggestion of every element of the claimed invention. In this instance, the Examiner failed to cite elements that teach or suggest various additional ones of the claimed limitations. For instance, regarding claim 5, the Examiner failed to cite a reference that teaches thinning the center of the pad. Regarding claim 7, the Examiner failed to cite a reference that teaches thinning the edge of the pad. Regarding claim 9, the Examiner failed to cite a reference that teaches thinning the pad in a location where the pad is thick, relative to the rest of the pad. Appellant respectfully submits that the cited portion of the '462 reference (col. 7, lines 48-60) does not teach or suggest such claimed features concerning pad geographic or thickness attributes. Therefore, Appellant submits that a *prima facie* case of obviousness has not been established and requests that the § 103(a) rejection be removed.

ISSUE 3: Is the § 103(a) rejection of claim group 4 over the asserted combination of references (*Renteln* '987 in view of *Yang* '462) proper when the Examiner failed to cite any evidence of motivation in the prior art to modify the '987 reference?

The § 103(a) rejection of the above-mentioned claim group over the '987 reference in view of the '462 reference is improper because the Examiner failed to provide evidence of teaching or suggestion of motivation from the prior art for making the asserted modification

of the '987 reference. A *prima facie* case of obviousness requires both: (1) complete correspondence between the asserted prior art and the claimed invention; and (2) evidence of motivation that the skilled artisan would be led to modify the asserted teaching. In this instance, no evidence has been presented in support of the assertion that the skilled artisan would be led to modify the teachings of the '987 reference as asserted in the Final Office Action to arrive at the claimed invention.

The Office Action acknowledges that the '987 reference fails to teach, *inter alia*, Appellant's claimed apparatus including the claimed arranging a conditioning wheel comprises thinning the pad (Final Office Action, p. 3). The Office Action attempts to overcome this deficiency in the teaching of the '987 reference by identifying an allegedly corresponding limitation in the '462 reference. However, this attempt to find complete correspondence between the asserted prior art and the claimed invention attempts only to satisfy the first component of the *prima-facie* obviousness test. The Examiner fails to provide any motivation for modifying the '987 patent as suggested. Specifically, in the Response to Arguments on page 5 of the Final Office Action, the Examiner acknowledged the motivation requirement of a § 103(a) rejection but failed to acknowledge that evidence of such motivation must be cited. As previously discussed in the Final Office Action Response filed on May 20, 2002, relevant case law indicates that such a § 103(a) rejection must be supported by evidence of motivation found in the prior art (*see, e.g., In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999)). The 25+ year old proposition of a predecessor court that reconstruction of an Appellant's invention is proper by selecting missing elements from various references in the absence of any motivation to do so, has been superceded by a plurality of more recent decisions of the Federal Circuit.

In order to modify the '987 reference, the Examiner must specifically identify clear and particular reasons that indicate why one of ordinary skill in the art would have been motivated to select the missing claim limitations and modify the underlying reference(s) with them. (*See, e.g., In re Dembiczak*). In the present case, the Final Office Action failed to provide prior art evidence that indicates why one of ordinary skill in the art would be motivated to look to modify the '987 reference with teachings of the '462 reference. The Final Office Action merely suggests that it would have been obvious "in order to alter the thickness of the pad." This statement of motivation is too general, since it may be applied in

an attempt to justify virtually any type of pad conditioning modification and does not provide motivation for making the specific modification asserted. The Office Action has not cited a portion of the '987 reference that establishes the need for such pad alteration. The Examiner merely relies on the disclosure of the present invention as a blueprint for piecing together the missing limitations in the '987 reference. Combining limitations without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability—the essence of hindsight. *See, e.g., Interconnect Planning Corp v. Feil*, 774 F.2d 1132, 1138, 227 U.S.P.Q. 543, 547 (Fed. Cir. 1985) (“The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time.”) Such hindsight modification is improper and, therefore there is no suggestion or motivation to make the proposed modification. Thus, the asserted modification(s) of the '987 reference lacks motivation and the § 103(a) rejection based upon the proposed modification(s) should be reversed.

In this instance, the Examiner's unsupported assertions that “the knowledge [is] generally available to one of ordinary skill in the art” are devoid of any evidence supporting the assertions, and therefore the rejections are improper. In specific regard to the § 103(a) rejection of the claims of claim group 4, the Examiner made an unsupported assertion that it would have been obvious to arrange a conditioning wheel to “alter the thickness of a pad.” In making the above unsupported assertion, the Examiner failed to provide any evidence as to why one skilled in the art would be motivated to thin the pad of the '987 reference in the manner as claimed in the present invention. Therefore, Appellant submits that the Examiner failed to cite evidence of motivation for making the asserted modifications of the '987 reference, and requests that the § 103(a) rejections be removed.

ISSUE 4: Is the § 103(a) rejection of claim groups 5-6 proper when the asserted combination of references (*Renteln* '987 in view of *Hu* '947) fails to teach or suggest every element of the claimed invention?

The § 103(a) rejection of the above-mentioned claim groups is improper because the cited references fail to establish a *prima facie* case of obviousness. A *prima facie* case of obviousness requires a complete correspondence between the asserted prior art and the claimed

invention. The Final Office Action fails to explain how the invention is taught by the asserted '987 reference in view of the '947 reference.

More specifically, and for all the reasons stated above in connection with the § 102(b) rejection and incorporated herein by reference, Appellant fails to see among the cited reference portions, *inter alia*, a teaching or suggestion of features completely corresponding to the claimed limitations of an arrangement for determining that the wafer is being polished in the center-offset manner and a device that conditions the pad and positions the wafer carrier misaligned with respect to the pad as a function of the wafer being polished in the center-offset manner. As discussed above, a *prima facie* obviousness rejection under § 103(a) requires that the Office Action provide teaching or suggestion of every element of the claimed invention. In this regard, the § 103(a) rejection fails to cite references that teach or suggest every element of the instant invention since the '987 reference does not identically teach all the claimed limitations found in the independent claim (claim 12), from which the claims of claim groups 5-6 depend. Therefore, the Examiner failed to establish a *prima facie* case of obviousness, and the § 103(a) rejection should be removed.

Appellant further submits that the § 103(a) rejections are improper because the Examiner failed to establish a *prima facie* case of obviousness in regard to the asserted teachings of the '947 reference. A *prima facie* obviousness rejection under § 103(a) requires that the Office Action provide teaching or suggestion of every element of the claimed invention. In this instance, the Examiner failed to cite elements that teach or suggest various additional ones of the claimed limitations. For instance, regarding claims 15 and 16, the Examiner failed to cite a reference that teaches supplying conditioning material responsive to a detection arrangement adapted to detect whether a wafer is polishing in a center-offset manner. Appellant respectfully submits that the cited portion of the '947 reference (Fig. 5, col. 8, lines 29-56) do not teach or suggest the above-mentioned claimed features. Therefore, Appellant submits that a *prima facie* case of obviousness has not been established and requests that the § 103(a) rejection be removed.

ISSUE 5: Is the § 103(a) rejection of claim groups 5-6 over the asserted combination of references (*Renteln* '987 in view of *Hu* '947) proper when the Examiner failed to cite any evidence of motivation in the prior art to modify the '987 reference?

The § 103(a) rejection of the above-mentioned claim groups over the '987 reference in view of the '947 reference is improper because the Examiner failed to provide evidence of teaching or suggestion of motivation from the prior art for making the asserted modification of the '987 reference. As set forth above, a *prima facie* case of obviousness requires not only a complete correspondence between the asserted prior art and the claimed invention, but also evidence of motivation that the skilled artisan would be led to modify the asserted teaching. In this instance, no evidence has been presented in support of the assertion that the skilled artisan would be led to modify the teachings of the '987 patent as asserted in the Final Office Action to arrive at the claimed invention.

The Office Action acknowledges that the '987 reference fails to teach, *inter alia*, Appellant's claimed apparatus including a supply arranged to supply conditioning material to a polishing pad, and the conditioning material being water. The Office Action attempts to overcome this deficiency in the teaching of the '987 reference by identifying an allegedly corresponding limitation in the '947 reference. However, this attempt to find complete correspondence between the asserted prior art and the claimed invention attempts only to satisfy the first component of the *prima-facie* obviousness test. The Examiner fails to provide any motivation for modifying the '987 patent as suggested.

As set out under Issue 3 above, in the Response to Arguments on page 5 of the Final Office Action, the Examiner acknowledged the motivation requirement of a § 103(a) rejection but failed to acknowledge that evidence of such motivation must be cited. The present requirement that a § 103(a) rejection must be supported by evidence of motivation found in the prior art (*see, e.g., In re Dembiczak*) and prohibition on using the inventor's disclosure as a blueprint to combine limitations in hindsight (*see, e.g., Interconnect Planning Corp v. Feil*) are also set forth under Issue 3 above and incorporated herein by reference. The Examiner merely concludes that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Renteln with a supply as disclosed by Hu et al (sic) in order to provide a cleaning solution to condition a pad." While providing an additional apparatus to supply a cleaning solution to a pad would certainly be advantageous to providing a cleaning solution to the pad, the argument is self-serving and circular. Motivation to do some function, can't be found only in the fact that an apparatus will do that function. Such a "motivation" is merely a hindsight recitation of the

benefits achieved by the modification, rather than a forward-looking reasoning. The Examiner fails to provide evidence that a skilled artisan would even be motivated to supply cleaning solution to the pad of the '987 reference in the first place.

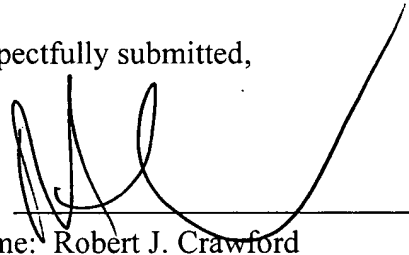
In this instance, the Examiner's unsupported assertions that "the knowledge [is] generally available to one of ordinary skill in the art" are devoid of any evidence supporting the assertions, and therefore the rejections are improper. Appellant submits that the Examiner failed to cite evidence of motivation for making the asserted modifications of the '987 reference, and requests that the § 103(a) rejections be removed.

IX. Conclusion

Appellants respectfully request reversal of the rejections as applied to the appealed claims and allowance of the application.

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APPENDIX OF APPEALED CLAIMS (09/383,876)

1. A method for chemical-mechanical polishing a wafer using a CMP apparatus having a polishing table including a polishing pad and a wafer carrier adapted to carry a wafer relative to the center of the polishing table, the method comprising:
 - using the polishing pad, polishing the wafer at a position relative to the center;
 - determining that the wafer is being polished in a center-offset manner; and
 - as a function of the wafer being polished in the center-offset manner, conditioning the pad and positioning the wafer carrier misaligned with respect to the pad.
2. A method for chemical-mechanical polishing, according to claim 1, wherein the center-offset manner includes at least one of: a center-fast or center-slow manner, and further including inspecting a wafer during the polishing process.
3. A method for chemical-mechanical polishing, according to claim 1, wherein determining that the wafer is being polished in a center-offset manner includes removing the wafer from the carrier and manually inspecting a wafer.
4. A method for chemical-mechanical polishing, according to claim 1, wherein the wafer is being polished in a center-fast manner, and further including arranging a conditioning wheel over the pad and relative to the center of the polishing table.
5. A method for chemical-mechanical polishing, according to claim 4, wherein arranging the conditioning wheel comprises thinning the center of the pad.
6. A method for chemical-mechanical polishing, according to claim 1, wherein the wafer is being polished in a center-slow manner, and further including arranging a conditioning wheel over the pad and relative to the center of the polishing table.
7. A method for chemical-mechanical polishing, according to claim 6, wherein arranging the conditioning wheel comprises thinning the edge of the pad.

8. A method for chemical-mechanical polishing, according to claim 1, wherein conditioning the pad comprises altering the thickness of the pad in at least one location.
9. A method for chemical-mechanical polishing, according to claim 8, wherein altering the thickness of the pad comprises thinning the pad in at least one location where the pad is thick relative to the rest of the pad.
10. A method for chemical-mechanical polishing, according to claim 8, wherein altering the thickness of the pad comprises applying increased pressure to a portion of the pad with a conditioning wheel.
11. An arrangement for chemical-mechanical polishing a wafer, the arrangement comprising:
- means for polishing a wafer;
 - means for holding a wafer face-down on the means for polishing;
 - means for determining whether the wafer is polishing in a center-offset manner; and
 - means, responsive to the determination means, for conditioning the polishing means and positioning the wafer misaligned with respect to the polishing means.
12. An arrangement for chemical-mechanical polishing, the arrangement comprising:
- a polishing pad arranged to rotate;
 - a wafer carrier arranged to carry a wafer, rotate, and hold the wafer face-down on the polishing pad;
 - a detection arrangement adapted to detect whether the wafer is polishing in a center-offset manner; and
 - a conditioning device adapted to condition the pad, both the conditioning device being arranged, and the wafer carrier being misaligned, relative to the polishing pad as a function of the wafer having been polished in a center-offset manner.
14. An arrangement for chemical-mechanical polishing, according to claim 12, further comprising a supply arranged to supply conditioning material to the polishing pad.

15. An arrangement for chemical-mechanical polishing, according to claim 14, wherein the conditioning material is supplied responsive to the detection arrangement.

16. An arrangement for chemical-mechanical polishing, according to claim 15, wherein the conditioning material comprises water.

17. A method for chemical-mechanical polishing a wafer, using a CMP apparatus having a polishing table including a polishing pad and a wafer carrier adapted to carry a wafer relative to the center of the polishing table, the method comprising:

means for using the polishing pad, polishing the wafer at a position relative to the center;

means for determining that the wafer is being polished in a center-offset manner;

means for compensating for the wafer being polished in a center-offset manner by conditioning the pad as a function of the wafer being polished in the center-offset manner, and positioning the wafer carrier misaligned with respect to the pad.

18. A method for chemical-mechanical polishing a wafer, according to claim 1, wherein positioning the wafer carrier misaligned with respect to the pad includes positioning the wafer carrier offset relative to a center of the pad.

19. An arrangement for chemical-mechanical polishing a wafer, according to claim 12, wherein the wafer carrier is offset relative to a center of the pad.